

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re The Application of:
Brian M. Hackworth

Serial No.: 09/862,949

Filed: May 22, 2001

For: SYSTEM AND METHOD FOR
CONSOLIDATED REPORTING OF
CHARACTERISTICS FOR A GROUP
OF FILE SYSTEMS

Examiner: Peng Ke

Art Unit: 2174

Confirmation No.: 9748

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December 17, 2009

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Sir:

REPLY BRIEF TO EXAMINER'S ANSWER

This Reply Brief is filed in response to the Examiner's Answer mailed on October 28, 2009.

(B) STATUS OF CLAIMS:

The status of the Claims pursuant to MPEP 1205.02 (iii) is:

Claims 1-76 are cancelled.

Claims 77-110 are pending.

Claims 77-110 are rejected by a FINAL Office Action mailed on February 24,
2009.

Rejections of rejected Claims 77-110 were appealed.

(C) GROUNDS OF REJECTION:

The grounds of rejection to be reviewed on Appeal, as set out in the Final Office Action mailed on February 24, 2009 are:

A.

“Claims 77-81, 83, 85, 86, 88-94, 96, 98-104, and 106-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Jong US Patent 7,107,534, in view of Manghirmalani US Patent 5,819,028 further in view of Chu 6,346,954.”

B.

“Claims 82, 84, 95, 97, and 110 rejected under 35 U.S.C. 103(a) as being unpatentable over anticipated De Jong, US Patent 7,107,534, in view of Manghirmalani US Patent 5,819,028 in view of Chu US Patent 6,346,954 further in view of Welter US Patent 6,633,912.”

C.

“Claims 87, 100, and 105 rejected under 35 U.S.C. 103(a) as being unpatentable over anticipated De Jong, US Patent 7,107,534, in view of Manghirmalani US Patent 5,819,028 in view of Chu US Patent 6,346,954 further in view of York US Patent 6,505,256”

(D) ARGUMENT:

At Page 3 of the Examiner's Answer, Claims 77-81, 83, 85, 86, 88-94, 96, 98-104, and 106-109 were rejected under 35 U.S.C. 103(a) as being unpatentable over de Jong U.S. Patent 7,107,534, in view of Manghirmalani et al. U.S. Patent 5,819,028, and further in view of Chu U.S. Patent 6,346,954.

5 The Supreme Court of the United States revisited an analysis of 35 U.S.C. 103(a) recently in the case *KSR International v. Teleflex*, 550 U.S. 398, 127 S.Ct. 1727, 82 U.S.P.Q.2d 1385 (decided April 30, 2007), hereinafter *KSR*.

 The Court in *KSR* points out that an analysis under 35 U.S.C. 103(a) begins when all elements recited in a claim are known in the prior art, then the question is whether it
10 would have been obvious to a person of ordinary skill in the art to combine the known elements as claimed. (Slip Opinion Page 4)

A principle which can be derived from *KSR* is that when a claim is to elements not disclosed by the prior art, then the claim is patentable under 35 U.S.C. 103(a).

 Applicant again applies this analysis of the law of 35 U.S.C. 103(a) to the
15 presently claimed invention by pointing out that Applicant's claim is to elements not disclosed by any of the cited art, as previously argued (Brief on Appeal at Page 25). That is, the cited art is completely silent concerning elements set forth in Applicant's independent claims, and therefore Applicant's independent claims are allowable under 35 U.S.C. 103(a).

Summary of Applicant's Argument

A brief summary of Applicant's claimed invention follows.

A plurality of servers, where each server has a plurality of volumes of storage devices. A volume refers to a logical arrangement of storage devices.

5 Applicant consolidates a plurality of volumes into a group of volumes selected from a plurality of servers.

Applicant then produces statistical information for the group of volumes and presents to an interested party.

10 Applicant respectfully urges that all cited art, both individually and when combined, has no disclosure of Applicant's claimed invention.

De Jong discloses a cluster of servers which have access to common data storage devices.

Manghirmalani discloses agent software which executes on a plurality of network
15 devices, and which send statistical information to a management station computer, to enable a manager to monitor the network devices using a graphical user interface.

Chu discloses a server which has a plurality of data storage devices, primarily RAID storage devices, which support storage of a plurality of logical drives. Chu
presents statistical information from his storage devices and his logical drives through a
20 graphical user interface.

None of the cited art discloses Applicant's claimed combining statistical information from a group of volumes selected across a plurality of servers.

Accordingly, the Applicant's claimed invention "combining statistical information from a group of volumes selected from a plurality of servers" are not disclosed by a combination of all of the cited art. Thus, Applicant's claimed invention is allowable under 35 U.S.C. 103(a).

5 It is possible that the Examiner is not giving patentable weight to Applicant's claimed assembling a group of volumes over a plurality of servers. Applicant respectfully urges that this claimed feature merits patentable consideration, and since the feature is absent from all cited art, that Applicant's claims are allowable.

Applicant's Formal Argument

Applicant's claimed invention, as set forth in representative Claim 77, comprises
in part:

Claim 77. A method for managing a computer network, comprising:
5 operating a *plurality of servers* connected to the network, each *server of the plurality of servers connected to one or more storage devices*;
organizing a *plurality of volumes across the plurality of servers*, wherein *each volume is a logical arrangement of the one or more storage devices connected to a particular server*;
10 *consolidating two or more selected volumes of the plurality of volumes into a group of volumes* using a graphical user interface, wherein *at least two volumes in the group of volumes are located on separate servers of the plurality of servers*;
identifying a party interested in statistical information related to operation
15 of the group of volumes using the graphical user interface;
polling *all servers within the group of volumes*, by a monitoring process, for statistical information;
combining statistical information from the servers within the group of volumes in order to provide a statistical information for the group of volumes;
20 displaying, on the graphical user interface, the statistical information for the group of volumes;
comparing the monitored statistical information to a threshold value to determine whether an event has occurred; and
in response to determining that an event has occurred, *notifying the*
25 *interested party*.

Elements of Claim 77 not disclosed by the cited art include:

operating a *plurality of servers* connected to the network, each *server of the plurality of servers connected to one or more storage devices*; . . .
30 organizing a *plurality of volumes across the plurality of servers* . . .
consolidating two or more selected volumes of the plurality of volumes into a group of volumes
. . . *at least two volumes in the group of volumes are located on*
35 *separate servers of the plurality of servers*; . . .
polling *all servers within the group of volumes* . . . *to provide a statistical information for the group of volumes* . . . *notifying the interested party*.

The Examiner's Argument

The Examiner states in his Answer at Pages 3-4:

5 “Claims 77-81, 83, 85, 86, 88-94, 96, 98-104, and 106-109 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Jong US Patent 7,107,534, in view of Manghirmalani US Patent 5,819,028 further in view of Chu 6,346,954.

As per claim 77, De Jong teaches a method for managing a computer network, comprising:

10 operating a plurality of servers connected to the network, each server of the plurality of servers connected to one or more storage devices, (see De Jong figure. 13, col. 9, lines 55-col. 10, lines 2)

 organizing a plurality of volumes across the plurality of servers, wherein each volume is a logical arrangement of the one or more storage devices connected to a particular server

15 assigning consolidating two or more selected volumes of the plurality of volumes into a group of volumes using a graphical user interface, wherein at least two volumes in the group of volumes are located on separate servers of the plurality of servers;(see De Jong, col. 10, lines 7-25)

20 consolidating two or more selected volumes of the plurality of volumes into a group of volumes using a graphical user interface, wherein at least two volumes in the group of volumes are located on separate servers of the plurality of servers;(see De Jong, col. 5, lines 15-45; De Jong consolidates servers into clusters)

25 identifying a party interested in statistical information related to operation of a group of volumes using the graphical user interface; (see De Jong, col. 11, lines 20-30)

 polling all volumes within the group of volumes by a monitoring process, for statistical information;

30 displaying on the graphical user interface statistical information relating only to the group of volumes; (see De Jong, col. 8, lines 40-58)

 in response to determining that an event has occurred, notifying the interested party. (see De Jong, col. 11, line 20-30)”

35 Applicant respectfully urges that the Examiner confuses Applicant's different servers, each having volumes of storage devices, with De Jong's consolidation of servers into clusters (Examiner's Answer: Page 4; citing DeJong at col. 10, lines 7-25; and citing De Jong col. 5, lines 15-45.

De Jong defines his clusters as:

“As is well known, a cluster is a collection of two or more independent servers that are able to access a common body of data storage and provide services to a common set of clients. In this embodiment, the server computer systems may have one or more storage enclosures 106a through 106g which serve to house a plurality of hard disk drives. The storage enclosures, as used herein, are preferably RAID-based disk arrays.” (De Jong col. 5 lines 38-45) (emphasis added)

De Jong’s cluster of servers have a common body of data storage, and have both independent disks and RAID systems of disks attached so that all of the servers can use all of the storage devices. De Jong provides a view of servers, (Hosts in his Fig. 13), subsystems, controllers, and drivers in his Figs. 13, 14, 15 and in De Jong col 9, line 55 – col 11 line 14.

Applicant respectfully urges that nowhere does De Jong disclose Applicant’s claimed novel *plurality of servers* connected to the network, each *server of the plurality of servers connected to one or more storage devices . . . each volume is a logical arrangement of the one or more storage devices connected to a particular server . . . plurality of volumes across the plurality of servers . . . consolidating two or more selected volumes of the plurality of volumes into a group of volumes*.

Applicant’s *group of volumes* is a plurality of storage devices selected from different servers, not De Jong’s servers in a cluster where all servers use all of the storage devices.

Further, in reference to Chu, confusion between Applicant’s claimed *volumes* and *group of volumes* continues in the Examiner’s Answer at its page 5, where it is stated:

“Chu teaches consolidating two or more selected volumes of the plurality of volumes into a group of volumes using a graphical user

interface, wherein at least two volumes in the group of volumes are located on separate servers of the plurality of servers.

combining statistical information from the servers within the group of volumes in order to provide statistical information for the group of volumes; see (Chu at his Fig. 5, item 72; and col. 8, lines 10-20)"

Applicant respectfully urges that Chu in his Fig. 5 shows a hierarchical display which is headed by a designation of a RAID array (item 71), followed by a designation of an ARRAY (item 72) of disks in the RAID array, and followed by the logical drives (item 73) written to the RAID array, and followed by the status of various disks (item 82) in the ARRAY of disks in the RAID array. Chu discloses displaying the presentation of Fig. 5 on the screen of a computer as a graphical user interface in his lines at Chu col. 8 lines 10-20.

Absent from Chu is any disclosure of Applicant's claimed novel *plurality of servers* connected to the network, each *server of the plurality of servers connected to one or more storage devices . . . each volume is a logical arrangement of the one or more storage devices connected to a particular server . . . plurality of volumes across the plurality of servers . . . consolidating two or more selected volumes of the plurality of volumes into a group of volumes.*

Applicant's *group of volumes* is a plurality of storage devices selected from different servers, not Chu's RAID array with disks and logical drives in the RAID array.

The Examiner even further confuses Chu's logical drives 106, 108, 110 shown in Chu's Fig. 7 with Applicant's claimed *plurality of volumes across the plurality of servers.*

This confusion is apparent in the Examiner's statement at Page 15 of the Examiner's Answer, where the Examiner states (emphasis added):

5 "1. The combination of Dejong, Manghirmalani and Chu teaches this limitation. Chu allows user to divide the physical drives into different logical driver and these physical drives are stored in multiple different server systems. (see Chu figure 7, items 106, 108, and 110; see Chu col. 9, lines 23-36; Examiner also considered each logical drive to be a volume; col. 3, lines 45-60) Therefore the combination teaches organizing a plurality of volumes across the plurality of servers, wherein each volume is a logical arrangement of the one or
10 more storage devices connected to a particular server."

This quoted paragraph states: "Examiner also considered each logical drive to be a volume; col. 3, lines 45-60)"

This analysis by the Examiner is inconsistent with Applicant's clear definition of
15 Applicant's "volume" as stated in the Specification, which provides a definition of a "volume" at Page 2 Lines 1-5 as follows: "filer is organized so that it includes one or more storage "volumes" that comprise a cluster of physical storage disks".

Applicant respectfully urges that the Examiner confuses Chu's "logical drives" with Applicant's claimed: *plurality of servers . . . each server of the plurality of
20 servers connected to one or more storage devices; . . . organizing a plurality of volumes across the plurality of servers . . . consolidating two or more selected volumes of the plurality of volumes into a group of volumes.*

Applicant's **volumes** of storage devices can support a plurality of logical drives, and so are not analogous to Chu's "logical drives".

Applicant clearly defines a “volume” as: “A filer is organized so that it includes one or more of storage “volumes” that comprise a cluster of physical storage disks”.

(Specification, Page 2 Lines 1-13)

Accordingly, Chu’s “logical drives” are not Applicant’s claimed *volumes*.

5

Distinctions

In order to clarify the distinctions between Applicant’s claimed novel elements made in Applicant’s Brief on Appeal, and made herein, Applicant sets out the hierarchical arrangements of Applicant’s claimed novel invention, and the hierarchical arrangements of both the cited De Jong and Chu patents.

10

Applicant in Claim 77 claims the following hierarchical organization:

1. a *plurality of servers*,
2. *volumes*, which are a cluster of physical storage disks attached to a server
3. *files* organized in the volumes
- 15 4. *groups of volumes*, made by *consolidating two or more selected volumes of the plurality . . . of volumes into a group of volumes*.
5. *provide a statistical information for the group of volumes*.

De Jong’s hierarchical arrangements are, see De Jong Fig. 13,

20

1. hosts (server)
2. subsystems
3. controllers and drives (individual disks) which can be RAID arrays

Chu discloses the hierarchical arrangement:

1. a single server, as illustrated in his Fig. 3,
2. with several “disk drive systems”, which can be RAID systems.
3. logical drives for files, organized on Chu’s RAID systems

Among elements claimed by Applicant in Claim 77 which are not disclosed by either De Jong or Chu are *volumes* (which are groups of storage devices such as RAID arrays) attached to different servers, and a *group of volumes*, along with Applicant’s claimed *combining statistical information from the servers within the group of volumes in order to provide a statistical information for the group of volumes*.

Applicant respectfully points out that Applicant claims a higher logical hierarchical arrangement of servers, storage devices, and grouping of volumes of the storage devices attached to different servers than is disclosed by any of the cited art.

Applicant next addresses the Manghirmalani patent.

Manghirmalani discloses agent software which executes on a plurality of network devices, and which send statistical information to a management station computer, to enable a manager to monitor the network devices using a graphical user interface on the management computer.

Turning now to Page 5 of the Examiner’s Answer, it is stated:

“Manghirmalani and De Jong fail to teach:
combining statistical information from the servers within the group of volumes in order to provide a statistical information for the group of volumes;

Chu teaches consolidating two or more selected volumes of the plurality of volumes into a group of volumes”

Accordingly, the Examiner relies on Chu to teach elements, which Applicant respectfully urges, are absent from Chu, namely items 4 and 5 mentioned above:

- 5 4. *groups of volumes*, made by *consolidating two or more selected volumes of the plurality of volumes into a group of volumes*.
5. *provide a statistical information for the group of volumes*.

Again, Applicant respectfully urges that Chu simply divides his data storage devices to support a plurality of logical drives. This disclosure by Chu fails to disclose
10 Applicant’s claimed novel “combining statistical information from a group of volumes selected from a plurality of servers”.

Under the analysis of *KSR*, the cited art is legally incapable of rendering claim 77 unpatentable under 35 U.S.C. 103(a), because the elements:

 A plurality of servers is claimed, where each server has a plurality of
15 volumes of storage devices. A volume refers to a logical arrangement of storage devices. Applicant consolidates a plurality of volumes into a group of volumes selected from a plurality of servers, and presents statistical information from the groups of volumes,
as recited in Claim 77 are absent from all cited art.

20 All independent claims are believed to be in condition for allowance.

 All dependent claims are dependent from independent claims which are believed to be in condition for allowance. Accordingly, all dependent claims are believed to be in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account

No. 03-1237.

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